

THE CLAIMS ARE LISTED FOR THE CONVENIENCE OF THE EXAMINER:

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1. An electronically tuned circuit, comprising a power amplifier coupled to an electronically tunable output network, said output network including an electronically tunable reactive component.
 2. An electronically tuned circuit as in claim 1, wherein said output network is adapted to be tuned to a selected frequency.
 3. An electronically tuned circuit as in claim 1, wherein said output network is adapted to be adjusted to match a selected load impedance.
 4. An electronically tuned circuit as in claim 1, wherein said output network is adapted to produce a modulated signal at the network output.
 5. An electronically tuned circuit as in claim 4, wherein said output network is further adapted to provide a power-amplifier load-impedance locus that substantially maximizes power-amplifier efficiency.
 6. An electronically tuned circuit as in claim 4, wherein said output network is further adapted to follow a substantially resistive power-amplifier impedance locus, thereby maintaining power-amplifier efficiency near maximum.
 7. An electronically tuned circuit as in claim 1, wherein said output network is adapted to be tuned in accordance with a predetermined set of tuning inputs.
 8. An electronically tuned circuit as in claim 7, wherein said tuning inputs are selected in accordance with a lookup table.

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9. An electronically tuned circuit as in claim 1, wherein said output network is adapted to be tuned in accordance with a predetermined lookup table of tuning inputs.

1 13. An electronically tuned circuit as in claim 1, wherein said electronically tunable
2 reactive component includes an electronically tunable capacitor.

1 14. An electronically tuned circuit as in claim 13, wherein said electronically tunable
2 capacitor includes a transistor.

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1 15. An electronically tuned circuit as in claim 13, wherein said electronically tunable
2 capacitor includes a diode.

1 16. An electronically tuned circuit as in claim 13, wherein said electronically tunable
2 capacitor includes a diode having a control terminal.

1 17. An electronically tuned circuit as in claim 13, wherein said electronically tunable
2 capacitor includes a micro electro-mechanical system device.

1 18. An electronically tuned circuit as in claim 13, wherein said electronically tunable
2 capacitor includes a variable-dielectric material.

1 19. An electronically tuned circuit as in claim 13, wherein said electronically tunable
2 capacitor includes a piezo-electric device.

1 28. An electronically tuned circuit as in claim 1, further comprising a controller, said
2 controller for providing a signal for controlling said electronically tunable output
3 network.

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4 29. An electronically tuned circuit as in claim 28, further comprising an envelope
5 detector with an envelope-detector input and envelope-detector output, said
6 envelope-detector output coupled to the input of said controller, said envelope
7 detector being responsive to an input RF signal and providing a modulation input to
8 said controller.

1 30. An electronically tuned circuit as in claim 28, further comprising a drive-level
2 adjustor coupled for adjusting amplitude of a signal provided to said power
3 amplifier.

Cont
1 31. An electronically tuned circuit as in claim 1, further comprising a digital signal
2 processor coupled to said power amplifier and to said electronically tunable output
3 network, said processor for providing a drive signal to said power amplifier and a
4 tuning signal to said electronically tunable output network.

1 32. An electronically tuned circuit as in claim 31, further comprising a controller
2 coupled to said digital signal processor and to said electronically tunable output
3 network, wherein output of said digital signal processor is directed to said controller
4 and wherein output of said controller is directed to said electronically tunable output
5 network.

1 33. An electronically tuned circuit as in claim 1, further comprising a drive-level
2 adjustor coupled for adjusting amplitude of a signal provided to said power
3 amplifier.

1 34. An electronically tuned circuit as in claim 33, wherein said electronically tunable
2 output network and said drive-level adjuster are adapted to produce a modulated
3 signal.

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35. An electronically tuned circuit as in claim 34, wherein said circuit is for providing a desired circuit output, wherein when said desired circuit output is above a threshold said electronically tunable output network is used to control amplitude and when said desired circuit output is below a threshold said drive level adjuster is used to control amplitude.

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36. An electronically tuned circuit as in claim 33, further comprising a controller for converting a modulation input into tuning signals for control of said electronically tuned network.

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37. An electronically tuned circuit as in claim 1, further comprising a bias input for setting bias level of said power amplifier.

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38. An electronically tuned circuit as in claim 37, wherein said bias level is adapted to the minimum level necessary to enable operation of the power amplifier, thereby reducing power consumption.

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39. An electronically tuned circuit as in claim 37, further comprising a controller for adjusting said bias level in response to frequency, impedance, and modulation inputs.

Cont'd 1 40. An electronically tuned circuit comprising:

2 (a) means for power amplifying; and

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4 (b) means for electronic tuning of said means for power amplifying
5 coupled to said means for power amplifying.

1 41. An electronically tuned circuit as in claim 40, wherein said means for power
2 amplifying operates in class E and said electronic-tuning means is capable of being
3 tuned to provide a reactance for optimum class-E operation for a selected frequency.

Cont'd 1 42. An electronically tuned circuit as in claim 40, wherein said means for power
2 amplifying operates in class E and said electronic-tuning means is capable of being
3 tuned to provide a reactance for optimum class-E operation while delivering power
4 to a selected load impedance.

1 43. An electronically tuned circuit as in claim 40, wherein said means for power
2 amplifying operates in class E and said electronic-tuning means is capable of being
3 tuned to provide a reactance for optimum class-E operation while simultaneously
4 modulating the output of said electronic-tuning means.

1 44. An electronically tuned circuit as in claim 40, wherein said means for power
2 amplifying operates in class E and further comprising a fixed reactance for optimum
3 class-E operation at a first frequency, wherein said electronic-tuning means is
4 capable of being tuned to provide said power amplifying means with a load
5 impedance for optimum class-E operation for a selected second frequency.

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1 45. An electronically tuned circuit as in claim 40, wherein said means for power
2 amplifying operates in class E and further comprising a fixed reactance for optimum
3 class-E operation with a first load impedance, wherein said electronic-tuning means
4 is capable of being tuned to provide said power amplifying means with a load
5 impedance for optimum class-E operation with a second load impedance different
6 from said first circuit load impedance.

Claim

1 46. An electronically tuned circuit as in claim 40, wherein said means for power
2 amplifying operates in class E and said electronic-tuning means is capable of being
3 tuned to provide an impedance for optimum class-E operation when the circuit is
4 delivering a maximum output signal amplitude, and said electronic-tuning means is
5 capable of being tuned to provide suboptimum class E operation when the circuit is
6 delivering less than a maximum output signal amplitude.

1 56. An electronically tuned circuit, comprising one or more power amplifiers, each of
2 said power amplifiers having an output network, said output network including a
3 tuning input, a network output, and an electronically tunable reactive component.

1 57. An electronically tuned circuit as in claim 56, wherein said output network is
2 adapted to be tuned to a fixed or variable frequency.

1 58. An electronically tuned circuit as in claim 56, wherein said output network is
2 adapted to be adjusted to match a fixed or variable load impedance at said network
3 output.

1 59. An electronically tuned circuit as in claim 56, wherein said output network is
2 adapted to produce a modulated signal at said network output.

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60. An electronically tuned circuit as in claim 1, wherein said output network includes at least two reactive components connected as a tuned circuit, wherein at least one of said reactive components is adapted to being electronically tuned by a tuning signal.

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61. An electronically tuned circuit as in claim 28, wherein said controller converts an input signal to a voltage suitable for controlling said tunable output.